

David W. Lehman
Krannert School of Management
Purdue University
dwlehman@purdue.edu

The Effects of Performance and Time on Organizational Risk-seeking

My dissertation will examine the joint effects of performance and time on organizational risk-seeking behaviors. Specifically, I ask whether the effects of performance on the likelihood of an organization engaging in risky behaviors vary depending on the amount of available time before a deadline. Performance is relative to the organization's aspiration level and time refers to the amount of available time to make and implement decisions and affect outcomes before a deadline. Risk-seeking behaviors are those actions that involve uncertainty and could produce the greatest loss to the organization (March & Shapira, 1992; Miller & Leiblein, 1996). I will draw primarily from *A Behavioral Theory of the Firm* (Cyert & March, 1963) for developing the conceptual basis for this relationship.

The distinctive features of the proposed dissertation are as follows. First, it will contribute to the empirical base for the behavioral theory of the firm. The question of determining an organization's aspiration level and when to measure performance and risk indicators are two particular problems faced by behavioral theorists (Greve, 2003). This study attempts to address these issues by testing the hypotheses in a context in which social aspiration levels are accurate and less ambiguous and by analyzing individual decisions rather than aggregations of multiple decisions over long periods of time. Second, it widens the discussion of the performance-risk relationship by emphasizing the role of time which will help us better understand how the performance-risk relationship operates over time and also respond to the growing call for organizational researchers to more explicitly take into account the role of time

(Mitchell & James, 2001). Additionally, the study is distinctive in that it uses a unique setting to test the hypotheses—play-by-play decisions from teams in the National Football League.

Rationale and Hypotheses

One of the fundamental arguments of behavioral theory is that organizations are goal-directed entities and that decisions are made in pursuit of these aspirations (Cyert & March, 1963). Consistent with other theories (i.e., control theory and prospect theory), when performance—current or expected—falls below aspiration levels, organizations become more risk-tolerant and initiate a problemistic search for solutions to address the performance-aspiration gap. When performance is at or above aspiration levels, organizations tend to be risk-averse and familiar routines are preferred. Thus, following behavioral theory, hypothesis 1 is proposed.

Hypothesis 1: Risk seeking is more likely when performance is below aspirations than when performance is above aspiration.

Goals within organizations are often linked to deadlines and deadlines are often inherent in the operations of organizational projects (Humphrey, Moon, Conlon, & Hofman, 2004). Decision makers perceive performance levels (relative to aspirations) differently when more time is available before a deadline than when less time is available. This is because decision makers more heavily discount the probability that future events will occur than the probability that events nearer in time will occur (March & Shapira, 1992; Weber & Chapman, 2005). Additionally, greater opportunities for the reversal of bad fortune are present when there is more time that is available before a deadline. This discounting of future events is consistent with behavioral theory's notion that organizational decisions also take into account expectations of future performance (Cyert & March, 1963; Greve, 2003). This suggests that, because decision makers perceive the likelihood and controllability of adverse performance gaps differently

depending on available time, time and performance will interact to predict the likelihood of risk-seeking as described below.

When the performance gap is small and there is more time available before a deadline, the performance gap is viewed as routine fluctuations in performance and risky behaviors are not deemed necessary because the gap is seen as controllable and approaching the deadline below the aspiration level is seen as less likely. However, as the deadline approaches and a small performance gap is present, the organization is more likely to engage in a search for solution and risk-taking is likely to result. On the other hand, when the performance gap is large and there is more time available before a deadline, the gap is no longer seen as a routine fluctuation in performance and a search for a solution will ensue earlier than if the gap was small. However, as the deadline approaches and a large performance gap is present, the organization's expectation of achieving the aspiration is low even if it engages in risky behaviors. Therefore, the likelihood that the organization will take risks is low because its attention shifts from its aspiration to the survival of the organization (March & Shapira, 1992), reverting to familiar routines.

Hypothesis 2: Performance and time interact to affect risk-seeking such that (a) risk-seeking decreases with available time when the adverse performance-aspiration gap is high, and b) risk-seeking increases with available time when the adverse performance-aspiration gap is low.

Methods

To examine the combined effects of performance and time on the likelihood of risk-taking, I plan to use historical data gathered from the National Football League. Such data offer several advantages for examining the proposed hypotheses. First, the sports setting offers a setting consisting of a timed series of decisions with a natural "deadline" (the end of the game) and variations of performance (relative to an opponent) and risks taken (such as plays called).

Second, the game's episodic nature (time gap between plays; coaches analyzing and calling plays from the sidelines) is consistent with the notion of organizations engaging in decision making by searching for alternative plays. Third, accurate recordings of individual decisions made by all organizations (teams) in the population (NFL) are readily available which allows me to examine specific decisions rather than aggregations of many decisions over a longer period of time. The data set consists of all games played during the 2000-2005 seasons (32 teams, 1984 games, and over 300,000 plays; rules of the game can be found at www.nfl.com).

One potential concern is the extent to which findings from the study will be generalizable to other settings. While this is a concern with any single setting study, the distinctive features of this setting would suggest that the findings may be especially generalizable to contexts where deadlines are critical and in winner-take-all settings (Frank & Cook, 1995). Moreover, there is increasing interest in using such data to study decision making (Romer, working paper).

The hypotheses will be tested using logistic regression, which will allow for testing the likelihood of particular behaviors occurring. Risk-taking, the dependent variable, will be operationalized in multiple ways and because of the nature of the game of football, these will be categorical variables. For example, I will examine the level of risk taken on fourth-down decisions (to punt will be considered less risky than a fourth-down conversion attempt). In addition, post-touchdown decisions (to attempt a field goal versus a two-point conversion) will also be examined. The independent variables used to predict risk-taking in the logistic regression models are performance and the availability of time before a deadline. Performance will be measured as the current point spread and the availability of time will be measured as remaining play time in the game. Additionally, various control variables will be included in the models, such as coaching tenure, home field advantage, weather conditions, and so on.

The data coding process is currently under way and is almost complete. Preliminary analyses of a sub-sample of the games suggest evidence of a significant interaction of time and performance in predicting the likelihood of risk-seeking behaviors. I hope to have results from the data analysis available at the consortium. Any feedback is greatly appreciated and can be sent to me at dwlehman@purdue.edu.

References

- Cyert, R.M., & March, J.G. 1963. *A behavioral theory of the firm*. New Jersey: Prentice-Hall.
- Greve, H. 2003. *Organizational learning from performance feedback: A behavioral perspective on innovation and change*. Cambridge, U.K.: Cambridge University Press.
- Humphrey, S.E., Moon, H., Conlon, D.E., & Hofman, D.A. 2004. Decision-making and behavior fluidity: How focus on completion and emphasis on safety changes over the course of projects. *Organizational Behavior and Human Decision Processes*, 93: 14-27.
- March, J.G., & Shapira, Z. 1992. Variable risk preferences and the focus of attention. *Psychological Review*, 99: 172-183.
- Miller, K.D., & Leiblein, M.J. 1996. Corporate risk-return relations: Returns variability versus downside risk. *Academy of Management Journal*, 39: 91-122.
- Mitchell, T.R., & James, L. 2001. Building better theory: Time and the specification of when things happen. *Academy of Management Review*, 26: 530-547.
- Romer, D. Working paper, revised July 2005. Do firms maximize? Evidence from professional football.
- Weber, B.J., & Chapman, G.B. 2005. The combined effects of risk and time on choice: Does uncertainty eliminate the immediacy effect? Does delay eliminate the certainty effect? *Organizational Behavior and Human Decision Processes*, 96: 104-118.